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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/539,318

06/15/2005

Andreas Johannes Gerrits

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS

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BRIARCLIFF MANOR, NY 10510

EXAMINER

GADDY, BENJAMIN E

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/539,318	Applicant(s) GERRITS ET AL.	
	Examiner BENJAMIN E. GADDY	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 June 2006 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Preliminary Amendment

1. The preliminary amendment to the claims was received on 6/15/2005 and the amended claims have been treated on the merits as below.

Foreign Priority Application

2. Certified copies of the foreign priority application have been received on 6/15/2006.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Sinusoid selection for audio coding via local-band frequency analysis".

4. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.

- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned

with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 6 and 9 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 3 and 9, respectively, of copending Application No. 10/539,311. Although the conflicting claims are not identical, they are not patentably distinct from each other because if the subject matter of one application, as currently written, were to issue as a patent, one or more of the independent or dependent claims of the other application would be a substantial duplicate of one or more independent or dependent claims of the original application.

Claim #6 of the examined application includes all the limitations of Claim #3 of the copending case, therefore it is subject to a double patenting rejection.

Examined Claim #6	Copending application ('311) Claim #3 (rearranged for clarity without any change in scope of soughtafter patent protection)
A method of encoding an audio signal by representing at least part of said audio signal by a plurality of sinusoids, the method comprising the steps of:	A method of encoding an audio signal by representing at least part of said audio signal by a plurality of sinusoids, the method comprising the steps of:
performing an analysis on a first segment	performing an analysis on a first segment of said

of said audio signal;	audio signal;
selecting candidate sinusoids based on said analysis;	selecting candidate sinusoids based on said analysis;
defining for at least one of the candidate sinusoids a local frequency band around said candidate sinusoid's frequency;	<u>further comprises a further selection out of the selected sinusoids which comprises the steps of</u> defining for at least one of the selected sinusoids a local frequency band around said selected sinusoid's frequency;
combining amplitudes of frequency components within said local frequency band from which at least one of the candidate sinusoids within said local frequency band is excluded;	combining amplitudes of frequency components within said local frequency band from which at least one of the selected sinusoids within said local frequency band is excluded;
and selecting said candidate sinusoid as a selected sinusoid in dependence on the combination of amplitudes	and <u>further</u> selecting said selected sinusoid as a <u>further</u> selected sinusoid in dependence on the combination of amplitudes
further selection out of the selected sinusoids which comprises the steps of	
determining for at least one of the selected sinusoids a phase consistency defined by an extent to which a phase of said selected sinusoid at a certain moment in time can be	determining for at least one of the candidate sinusoids a phase consistency defined by an extent to which a phase of said candidate sinusoid at a certain moment in time can be predicted from

predicted from a phase of said selected sinusoid determined at another moment in time;	a phase of said candidate sinusoid determined at another moment in time;
and further selecting said selected sinusoid as a further selected sinusoid when its phase consistency is above a predetermined threshold.	and selecting said candidate sinusoid as a selected sinusoid when its phase consistency is above a predetermined threshold.

Claims 9 of the current application and 9 of the copending application have similar language directed towards an audio encoder.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Drawings

7. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. For instance, while Figure 4 is alleged to illustrate an “audio system” as claimed in claim 10, but the figure does not clearly show any component of an audio system. Therefore, the elements of the audio system claimed in claim 10 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet,

even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutsui (US 5,301,205) in view of McAulay (US 5,054,072).

Consider claims 1 and 8: Tsutsui discloses encoding an audio signal by representing at least part of said audio signal by a plurality of sinusoids (**see Abstract**),

the method comprising the steps of: performing an analysis on a first segment of said audio signal **(see Col. 6, lines 1-20, where Tsutsui discusses allocating bits);**

selecting candidate sinusoids based on said analysis **(see Figure 4 and Col. 7, lines 27-35, where Tsutsui discusses spectral coefficients);**

defining for at least one of the candidate sinusoids a local frequency band around said candidate sinusoid's frequency **(see Col. 7, lines 24-26, where Tsutsui discusses plural frequency bands based on spectral coefficients);**

combining amplitudes of frequency components within said local frequency band **(see Col. 7, lines 12-24, where Tsutsui discusses each range of frequencies is grouped into a band, and the coefficients are quantized, therefore combined)**

and selecting said candidate sinusoid as a selected sinusoid in dependence on the combination of amplitudes **(see Col. 7, lines 12-24, where Tsutsui discusses each range of frequencies is grouped into a band, and the coefficients are quantized, therefore combined).**

Tsutsui does not specifically disclose excluding a candidate sinusoid, however McAulay discloses excluding a candidate sinusoid **(see Col. 7, lines 45-50, where McAulay discusses replacing a measured frequency)**. It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Tsutsui, and use excluding a candidate sinusoid as taught by McAulay, thus improving the coding of speech by making higher transmission rates possible, as discussed by McAulay **(see Col. 2, lines 62-69)**.

Consider claim 2: Tsutsui discloses a bandwidth of said local frequency band around said candidate sinusoid's frequency is defined in dependence on said candidate sinusoid's frequency

(see, e.g. Col. 1, lines 53-65, where Tsutsui discusses the prior-art system of bandwidths that vary with frequency).

Consider claim 3: Tsutsui discloses dependence on said candidate sinusoid's frequency is based on a human's perception of audio (see Col. 1, lines 53-56, where Tsutsui discusses taking the characteristics of human hearing into account).

Consider claim 4: The combination of the above discloses candidate sinusoid is selected as a selected sinusoid when its amplitude is significant with regard to said combination of amplitudes (see Fig. 3, where Tsutsui shows calculating a magnitude and Col. 9, lines 15-25, where Tsutsui discusses a quantizing circuit calculation),

which significance is evaluated by thresholding a difference between said candidate sinusoid's amplitude and a weighted mean amplitude of frequency components within said candidate sinusoid's local frequency band from which at least one of the candidate sinusoids within said local frequency band is excluded (see Col. 9, lines 16-28, where Tsutsui discusses using a mean value to calculate energy and an allocation based on magnitude).

Consider claim 5: The combination of the above discloses candidate sinusoid is selected as a selected sinusoid when its amplitude is significant with regard to said combination of amplitudes, (see Fig. 3, where Tsutsui shows calculating a magnitude and Col. 9, lines 15-25, where Tsutsui discusses a quantizing circuit calculation)

which significance is evaluated by thresholding a ratio of: a difference between said candidate sinusoid's amplitude and a weighted mean amplitude of frequency components within said candidate sinusoid's local frequency band from which at least one of the candidate sinusoids

within said local frequency band is excluded; **(see Col. 9, lines 16-28, where Tsutsui discusses using a mean value to calculate energy and an allocation based on magnitude)**

and a weighted deviation of the amplitudes of frequency components within said local frequency band from which at least one of the candidate sinusoids within said local frequency band is excluded **(see Col. 9, lines 3—35, where Tsutsui discusses allocating based on the magnitude and dependent of the frequency of the band).**

Consider claims 6 and 9: Tsutsui and McAulay disclose a further selection out of the selected sinusoids which comprises the steps of: determining for at least one of the selected sinusoids a phase consistency defined by an extent to which a phase of said selected sinusoid at a certain moment in time can be predicted from a phase of said selected sinusoid determined at another moment in time **(see Col. 2, lines 26 - 40 where McAulay discusses predicting phases across frames and Col. 5, lines 10-20, where McAulay discusses the phase calculation);**

and further selecting said selected sinusoid as a further selected sinusoid when its phase consistency is above a predetermined threshold **(see Col. 7, lines 19-27, where McAulay discusses phase modeling and a required minimum value, therefore a threshold).**

Consider claim 7: Tsutsui and McAulay disclose determining phase consistency comprises the steps of: segmenting a third segment of said audio signal into at least a first and a second part **(see Col. 8, lines 4-10, where McAulay discusses pitch periods);**

determining the actual phases of said selected sinusoid in at least the first and the second part **(see Col. 8, lines 8-15, where McAulay discusses evaluating the phase after a determination);**

using the actual phase in the first part to serve as the input for predicting the actual phase in the second part **(see Col. 8, lines 30-35, where McAulay discusses determining residual phases)**;

and determining said selected sinusoid's phase consistency based on a prediction error between the actual phase and the predicted phase in the second part **(see Col. 7, lines 30-40, where McAulay discusses selection based on minimizing the error)**.

Consider claim 10: Tsutsui and McAulay disclose means for obtaining an audio signal **(see Figure 1)**,

an audio encoder for encoding said audio signal to obtain an encoded audio signal **(see Figure 1, e.g. part 16)**,

and a formatting unit for formatting the encoded audio signal into a format suitable for storage and/or transmission **(see e.g. Figure 3)**.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENJAMIN E. GADDY whose telephone number is (571)270-5134. The examiner can normally be reached on M-TH 9am - 4pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro can be reached on (571) 272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Benjamin E. Gaddy

/Benjamin E Gaddy/

Examiner, Art Unit 4181

2/11/2008

/Patrick N. Edouard/

Supervisory Patent Examiner, Art Unit 2626